MDOT
Michigan Department of Transportation

OFFICE MEMORANDUM

DATE: April 6, 2000

TO: Region Engineers
Region Associate Delivery Engineers
Region Construction Engineers
Resident/Project Engineers/TSC Managers

FROM: C. Thomas Maki
Chief Operations Officer

Gary D. Taylor
Chief Engineer/Deputy Director
Bureau of Highway Technical Services

SUBJECT: Bureau of Highway Instructional Memorandum 2000-04
Qualifications Requirements Sampling and Testing on the National Highway System (NHS)

Beginning July 1, 2000, all sampling and testing data used in the acceptance testing or the Independent Assurance Program must be conducted by qualified personnel. This applies to concrete, bituminous, soil density and aggregate acceptance testing for all contractor, local agency, consultant and MDOT personnel.

In cooperation with FHWA and industry, the department has developed a transitional qualifications program for the year 2000. Ultimately, this program will be revised with the goal of a single qualification method. The current system involves the following six conditions to ensure the use of qualified individuals:

1. Formal training
2. Hands-on training
3. On-the-job training
4. A written and practical exam
5. Periodic re-qualification
6. Individuals that perform the sampling and testing procedures incorrectly must be re-qualified.

Two options to achieve qualification are currently provided, so that all testers are subjected to the same examination requirements (both written and practical). In addition, impartiality on the part of the examiner must be maintained. Grand fathering or waiving of these requirements will not be allowed.

During calendar year 2000, a tester may be qualified as follows:

Concrete

Option 1 - Concrete testers will require a Michigan Level 1 Concrete Tester Certification (three year certification). Certification and testing will be conducted at various locations statewide by the Michigan Concrete Association and the Michigan Concrete Paving Association.

Option 2 - Any concrete tester who does not possess a Level 1 Certification will be considered qualified on a temporary basis (one construction season only) when all of the following requirements are met:

1. Receives structured training by a certified concrete tester (Michigan Level 1). This training will include instruction in the proper sampling procedures for concrete (ASTM C 172), the proper testing procedures for concrete temperature (ASTM C 1064), slump (ASTM C 143), air content (ASTM C 231 and ASTM C 173), and the molding and curing of field test specimens (ASTM C 31). Training will include a period (four hours minimum) of actual test demonstrations with the employee on the proper methods of sampling and testing, and the importance of the test results. The employee will be given a copy of all sampling and testing procedures.

2. If necessary, the employee will then be required to practice each test using the department's video presentation as a reference guide and the written procedures in the Michigan Construction Manual (estimated time required, 4-12 hours).

3. The employee will work under the direct supervision of a certified concrete tester (Michigan Level 1) in the project office until the requirements of Construction Technician Work Element 14 are met as defined in the *Work Element Certification Procedures and Personnel Classification Plan for Transportation Construction Technicians*, January 1994.

4. The employee must successfully complete a two-part examination (four hours) administered by the region, with assistance from the Michigan Concrete Association. The first part will be a written test in accordance with the current test procedures for Michigan Level 1 concrete testers. The second part of the examination will be a (closed book) performance evaluation of the above test procedures. The employee must demonstrate all sampling and testing procedures without coaching (two attempts), as verified by a standardized checklist. Questioning by the tester to verify that the employee fully understands the test procedures and sampling methods may be necessary to correct minor errors. After passing these test requirements, the employee will be qualified for testing for that season only.

Re-certification for certified concrete technicians will be in accordance with the current Michigan Concrete Association or Michigan Concrete Paving Association re-certification procedures for Michigan Level 1 Concrete Testers (three-year certification). Future re-qualification for those employees deemed to be qualified under Option 2 will be by the Michigan Level 1 Concrete Tester method (Option 1).

Bituminous

Option 1 - Any tester* meeting the requirements of the Michigan Bituminous QC/QA Technician Qualification Program (three year certification) is qualified for acceptance testing. This program is conducted by Ferris State University. Re-qualification will be in accordance with this program.

For performing bituminous mixture sampling only, bituminous testers must be trained by a qualified technician to sample on a limited number of selected projects during the 2000 construction season. A written guideline will be developed by the MDOT/Michigan Asphalt Paving Association training committee for this "sample only" qualification.

Option 2 - For non-QC/QA projects on the NHS (typically local agency projects), qualification may be through the Michigan Bituminous QC/QA Technician Qualification Program or through current certification for Michigan Level 1 bituminous testers.

* Industry testers who are not qualified under Option 1 may continue to sample and test if they are witnessed by a tester qualified under Option 1 for the year 2000 construction season.

Aggregates

Option 1 - Any tester who has met the requirements for the Michigan Certified Aggregate Technician is qualified for acceptance sampling and testing of aggregates. Training and Certification testing will be at Ferris State University.

Option 2 - A person not meeting the certification requirements must receive training by reviewing video tapes and written information. They must then supply documents on three examples of tests they have performed for the field office (on-the-job training). They must then take a written and practical examination covering the aggregate tests. This exam is to be administered by a certified aggregate technician.

Each aggregate testing segment will be broken down into modules of testing, as follows:

1. Sample Reduction (ASTM C-702)

2. Drying and Washing Materials (ASTM C-117)

3. Sieving (ASTM C-136)

4. Picking Crush (MTM-117)

5. Sampling (ASTM D-75 and MTM-107)

The seasonal, co-op, or permanent personnel may only be qualified for the module(s) that pertain to their job assignment.

Prior to the next construction season, this provisionally qualified person will be required to take an examination, including written and practical evaluations, to become fully qualified. This exam is to be administered by a certified aggregate technician. Successful completion of

the exam will allow the technician to receive a five-year qualification for the individual test procedure.

A person must be re-qualified at five year intervals by successfully passing both a practical and a written examination administered by a certified aggregate technician with assistance from Ferris State University.

Soil Density

Option 1 - The tester has met the requirements of the department's Density Technology Certification Program and has successfully completed radiation safety training. Density technology certification and training will be held at Lansing Community College and Ferris State University.

Option 2 - The tester has demonstrated the ability to perform all five density procedures (Density In-Place Test, Speedy Moisture Test, Michigan Cone Test, One-Point T-99 Test, and Michigan Modified T-180 Test) without assistance, pass a written examination, and successfully complete radiation safety training. The written examination and the proficiency evaluation is to be administered by the region density specialist or an approved outside agency. Currently the approved outside agency is Ferris State University.

Re-certification for certified density technicians must be in accordance with current department requirements (five year certification). A person qualified by Option 2 above must be re-qualified through retesting at three year intervals.

Independent Assurance Testing of Qualified Personnel

All personnel doing acceptance testing on the NHS are subject to independent assurance verification in accordance with Section E of the MDOT *Materials Quality Assurance Procedures Manual*. The required Independent Assurance Test (IAT) is a check of the equipment used and the tester's ability to perform the required tests. In the event that a tester fails the IAT process (including all retests), the manual's QA procedures will be followed.

This tester will be given a probation period of up to four weeks or longer during which they will not be allowed to do testing related to acceptance on the NHS. Re-qualification in the area of the failed IAT process will then take place using the process for re-certification or re-qualification involving a practical and written examination. If failed a second time, the tester will not be qualified to perform the related tests for acceptance on the NHS, until re-qualification is achieved through the formal training process.

Oversight Committee

An MDOT Qualifications Committee for Testing will be established to oversee the qualifications program, and to monitor the lists of qualified and non-qualified testers. The membership of this committee will include Construction and Technology staff specialists, the bureau training coordinator, and region and industry representatives.

The qualification program is subject to labor relations discussions with the appropriate bargaining unit(s).

If you have questions related to the details of this materials tester qualification program, please contact the following individuals:

John LaVoy, Construction Staff Engineer (Concrete), at 517-335-2244
Mike Frankhouse, Construction Staff Engineer (Bituminous), at 517-322-5672
Pat O'Rourke, Geotechnical Services Engineer (Soil Density), at 517-322-1633
Alan Robords, Quality Control Manager (Aggregates), at 517-322-1357

If you have questions relating to training (both formal or onsite) please contact Pat Smith, Bureau Training Coordinator, at 517-322-1741.

C. Thomas Maki
Chief Operations Officer

Gary D. Taylor, Chief Engineer/Deputy Director
Bureau of Highway Technical Services

BOHTS:C/T:JTL:kab

Subject Index: Training

cc:
C&T Division Engineers
Real Estate, M. Frierson
Maintenance Division, C. Roberts
OEO - A. Suber
G. Taylor
S. Kulkarni
R. Knapp
V. Blaxton
K. Trentham
MAPA
MCA
AUC
MRPA
S. Cook
T. Hynes
P. O'Rourke
J. Staton
C&T Division Technicians
Design Division, P. Miller
Traffic & Safety Division, J. O'Doherty
T. Maki
J. Klee
J. Reincke
J. Ruszkowski
B. Jay
MRBA
MCPA
MAA
CRAM
J. Culp
R. Endres
G. Mayes
D. Smiley
R. Till